CLAIMS:

We Claim:

1. A substantially unblended polyethylene comprising an ethylene α-olefin copolymer:

wherein said copolymer has a density in the range of from 0.910-0.960 gm/cm^3 (grams per cubic centimeter);

wherein said copolymer has a melt index ratio I_{21}/I_2 (MIR), as determined by ASTM D-1238 condition E, in the range of from 40-90, at an MI of 0.7 g/10 min. (gram per minutes);

wherein said copolymer has a melt strength (MS) in the range of from 5-20 cN (centiNewtons); and

wherein said copolymer has a CDBI of greater than 60%.

2. The substantially unblended polyethylene of Claim 1, wherein said copolymer has a weight average molecular weight (Mw) in the range of 60,000-200,000, and a melt index (MI), as determined by ASTM D-1238 condition E, in the range of 0.1-15 g/10 min.

3. The substantially unblended polyethylene of Claim 2, wherein said ethylene α-olefin copolymer has a density in the range of from 0.915-0.960 g/cm^3;

an MIR in the range of from 45-85;

an MS in the range of from 6-20 cN; and

an MI in the range of from 0.1-10 g/10 min.

4. The substantially unblended polyethylene of Claim 2, wherein said ethylene α-olefin copolymer has a density in the range of from 0.915-0.950 g/cm^3;

an MIR in the range of from 50-80;

an MS in the range of from 7-20 cN; and

an MI in the range of from 0.1-10 g/10 min.

5. The substantially unblended polyethylene of Claim 2, wherein said ethylene α-olefin copolymer has a density in the range of from 0.915-0.940 g/cm^3;

an MIR in the range of from 55-75;

an MS in the range of from 7-20 cN; and

an MI in the range of from 0.1-10 g/10 min.

6. A gas phase polymerization process for producing the substantially unblended polyethylene of any one of Claims 1-5.

7. The gas phase polymerization process of Claim 6 wherein said polymerization of said ethylene and α-olefin includes catalysis by a mixed metallocene system comprising:

a) a bridged bisindenyl zirconocene dichloride, wherein said indenyl is hydrogenated; and

b) one of a bridged bisindenyl zirconocene dichloride, wherein said indenyl is unsaturated; or a bridged bisindenyl zirconocene dichloride, wherein the cyclopentadienyl ring is substituted with one or more substituents;

wherein a) and b) are each separately supported on silica support;

wherein said a) and b) are present in said gas phase polymerization process in a ratio of 60:40 to 40:60; and

wherein said mixed metallocene system is activated by a methylalumoxane.

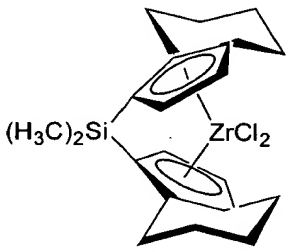
8. The gas phase polymerization of Claim 7, wherein said a) is dimethylsilylbis(tetrahydro-1-indenyl) zirconium dichloride, and b) is rac-dimethylsilylbis(1-indenyl)zirconium dichloride.

9. A mixed metallocene catalyst system comprising:

a) a dimethylsilyl-bridged bis-indenyl zirconocene dichloride, wherein said indenyl is saturated; and

b) a dimethylsilyl-bridged bis-indenyl zirconocene dichloride, wherein said indenyl is unsaturated.

10. The mixed metallocene catalyst system of Claim 9 wherein said dimethylsilyl-bridged bis-indenyl zirconocene dichloride of a) has a structure represented by:



wherein said structure has substituents or is unsubstituted.

11. The mixed metallocene catalyst system of Claim 10 wherein the substituents on the ring are the same or different.

12. The mixed metallocene catalyst system of Claim 10 wherein the ring is unsubstituted.

13. The mixed metallocene catalyst system of Claim 9 wherein said system is supported.

14. The mixed metallocene catalyst system of Claim 13 wherein said support is one of silica, silicates, clay, alumina, or composite oxides.

15. The mixed metallocene catalyst system of Claim 13 wherein said support is silica.

16. The mixed metallocene catalyst system of Claim 9 wherein said mixed metallocene catalyst system is activated by one of methylalumoxane, modified methylalumoxane, or non-coordinating anions, or mixtures thereof.

17. The mixed metallocene catalyst system of Claim 9 wherein said catalyst system is activated by methylalumoxane.

18. The mixed metallocene catalyst system of Claim 9 wherein said saturated a) and said unsaturated b) indenyl groups are present in said mixed metallocene catalyst system at a ratio of 90:10, 10:90; 80:20, 20:80; 60:40, 40:60; or 50:50.

19. The mixed metallocene catalyst system of Claim 9 wherein said a) is dimethylsilylbis(tetrahydro-1-indenyl) zirconium dichloride, b) is rac-dimethylsilylbis(1-indenyl)zirconium dichloride, and wherein said a) and said b) are present in said mixed metallocene catalyst system in a ratio of 60:40 to 40:60, and wherein said catalyst is activated by methyl alumoxane.

20. A mixed catalyst system comprising:

a) a bridged indenyl zirconocene dichloride wherein the indenyl group is saturated, and the substituents at each position are hydrogen; and

b) a bridged indenyl zirconocene dichloride, wherein the indenyl is unsaturated;

wherein said a) and said b) are each supported separately, on a silica support;

wherein said a) and b) are present in said mixed metallocene catalyst system in a ratio of 40:60 to 60:40; and

wherein said mixed catalyst system is activated by methylalumoxane.

21. A substantially non-blended polyethylene, comprising:

an ethylene, α-olefin copolymer wherein said α-olefin is one or more of propylene, butene-1, pentene-1, hexene-1 or octene-1;

wherein said copolymer has a density in the range of 0.915-0.960 g/cm^3;

wherein said copolymer has a MIR in the range of from 50-70;

wherein said copolymer has a MS from 7-20 cN;

wherein said copolymer has a $M_w/M_n \leq 2.5$;

wherein said copolymer has a CDBI greater than 60%;

wherein said copolymer has a weight average molecular weight (Mw) in the range of 60,000-200,000; and

wherein said copolymer has a MI in the range of from 0.1-10 dg/min, as determined by ASTM D-1238 condition E.

22. A process for producing the substantially non-blended polyethylene of Claim 21.

23. The process of Claim 22 wherein said process includes a mixed catalyst system, comprising:

a) a bridged indenyl zirconocene dichloride wherein the indenyl group is saturated, and the substituents at each position are hydrogen; and

b) a bridged indenyl zirconocene dichloride, wherein the indenyl is unsaturated;

wherein said a) and said b) are each supported separately, each being on a silica support;

wherein said a) and b) are present in said mixed catalyst system in a ratio of 40:60 to 60:40; and

wherein said mixed catalyst system is activated by a methylalumoxane.

24. The process of Claim 23 wherein said a) is dimethylsilylbis(tetrahydro-1-indenyl) zirconium dichloride, and said b) is rac-dimethylsilylbis(1-indenyl) zirconium dichloride.

25. A gas phase polymerization process for producing the unimodal molecular weight, substantially unblended polyethylene of claim 2.

26. A gas phase polymerization process for producing the unimodal molecular weight, substantially unblended polyethylene of claim 3.

27. A gas phase polymerization process for producing the unimodal molecular weight, substantially unblended polyethylene of claim 4.

28. A gas phase polymerization process for producing the unimodal molecular weight, substantially unblended polyethylene of claim 5.